

WHAT IS CLAIMED IS:

1. An inverter controller for driving a motor, comprising:
 - an AC power supply for supplying an AC power;
 - a rectifier formed of a diode bridge for rectifying the AC power to be
5 converted to DC power;
 - a reactor having a predetermined small capacity which is connected to the rectifier, for improving a power factor of the AC power supply;
 - an inverter which converts the DC power to AC power for driving the motor;
 - 10 a capacitor having a predetermined small capacity which is connected between DC bus lines of the inverter (3) to absorb regeneration energy from the motor;
 - a motor voltage command generator which generates a motor voltage command value of the motor, based on a speed command value of the motor applied from the outside;
 - 15 a PN voltage detector which detects a DC voltage value of the inverter;
 - a PN voltage corrector which calculates a ratio of the DC voltage detection value of the inverter obtained by the PN voltage detector to a predetermined DC voltage reference value of the inverter to thereby
20 generate a PN voltage correction factor;
 - a first motor voltage command corrector which performs voltage correction of the motor voltage command value by multiplying the motor voltage command value obtained by the motor voltage command generator
25 by a PN voltage correction factor which is an output value of the PN voltage

corrector to thereby produce a motor voltage command correction value;

a motor current detector which detects a motor current of the motor;

a beat amount corrector which calculates a fluctuation amount of the motor current from the motor current detection value obtained by the motor current detector and generates a reverse phase component of the motor current fluctuation amount, and

a second motor voltage command corrector which performs voltage correction of the motor voltage command correction value by multiplying the motor voltage command correction value obtained by the first motor voltage command corrector, by an output value of the beat amount corrector, and generates a voltage command value to be applied to the motor.

2. The inverter controller according to claim 1, wherein the beat amount corrector calculates the motor current fluctuation amount (Δi_j) by calculating an average (i_{j_mean}) of the motor current detection values.

3. The inverter controller according to claim 1, wherein the beat amount corrector calculates the average value of the motor current detection values every cycle of an inverter operation frequency (f_1), and in a period of calculating the average value of the motor current detection values, the average value of the motor current detection values in a period up to at least one cycle before is set as the motor current fluctuation amount (Δi_j), and when the period of calculating the average values of the motor current detection values is finished, the motor current fluctuation amount is updated.

4. The inverter controller according to claim 1, wherein the beat amount corrector calculates a positive to negative ratio of the motor current detection value and obtains the motor current fluctuation amount by
5 calculating the average of the positive to negative ratios.

5. The inverter controller according to claim 1, wherein the beat amount corrector calculates the average value of the positive to negative ratios every cycle of the inverter operation frequency, and in a period of calculating the
10 average value of the positive to negative ratios, the average value of the positive to negative ratios in a period up to at least one cycle before is set as the motor current fluctuation amount, and when the period of calculating the average values of the positive to negative ratios is finished, the motor current fluctuation amount is updated.

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6. The inverter controller according to claim 1, wherein the beat amount corrector calculates the motor current fluctuation amount by a first-order delay calculation of the motor current detection value.

20 7. The inverter controller according to claim 6, wherein the beat amount corrector suppresses the motor current fluctuation amount only when the inverter operation frequency is larger than a cutoff frequency in the first-order delay calculation.

25 8. The inverter controller according to claim 6, wherein the beat amount

corrector includes a delay time compensating means for compensating a time delay accompanied by the first-order delay calculation.

9. The inverter controller according to claim 1, wherein the beat amount
5 corrector includes a fundamental wave current detector which detects a fundamental wave component of a motor current from the motor current detection value and calculates the motor current fluctuation amount from a difference between the motor current detection value and an output value of the fundamental wave current detector.

10. The inverter controller according to claim 9, wherein the fundamental
10 wave current detector converts the motor current detection value from the three-phase AC to the two-phase DC, performs the first-order delay calculation thereof, and further converting the resultant value from the two-
15 phase DC to the three-phase AC, thereby obtaining the motor current fundamental wave component.

11. The inverter controller according to claim 1, wherein the motor
20 current fluctuation amount is suppressed only when the motor current fluctuation amount is larger than a predetermined set value of the motor current fluctuation amount.

12. The inverter controller according to claim 1, wherein the motor
25 current fluctuation amount is suppressed only when the inverter operation frequency is larger than a predetermined inverter operation frequency set

value.

13. The inverter controller according to claim 1, wherein the motor current fluctuation amount is not suppressed in a transient condition in which the motor is accelerated or decelerated.

14. The inverter controller according to claim 1, wherein the motor current detector includes a current detector which detects a current flowing on the side of an AC output of the inverter.

15. The inverter controller according to claim 1, wherein the motor current detector includes a current detector which detects a current flowing in a DC bus line of the inverter so that the motor current is detected from an output value of the current detector.

16. The inverter controller according to claim 14, wherein the current detector is a current sensor.

17. The inverter controller according to claim 14, wherein the current detector is a shunt resistance.

18. The inverter controller according to claim 15, wherein the shunt resistance previously provided in the DC bus line of the inverter for protecting an overcurrent of the inverter serves as the current detector.

19. The inverter controller according to claim 14, wherein the motor current detector detects the motor current in synchronization with a carrier frequency of the inverter.

5 20. An air conditioner which includes a converter apparatus for converting AC power to DC power and an inverter apparatus for converting the DC power converted by the converter to AC power of a variable voltage and a variable frequency and supplying the AC power to a motor for driving a compressor,

10 wherein the inverter apparatus, comprises:

an AC power supply for supplying an AC power;

a rectifier formed of a diode bridge for rectifying the AC power to be converted to DC power;

15 a reactor having a predetermined small capacity which is connected to the rectifier, for improving a power factor of the AC power supply;

an inverter which converts the DC power to AC power for driving the motor;

20 a capacitor having a predetermined small capacity which is connected between DC bus lines of the inverter to absorb regeneration energy from the motor;

a motor voltage command generator which generates a motor voltage command value of the motor, based on a speed command value of the motor applied from the outside;

25 a PN voltage detector which detects a DC voltage value of the inverter;

a PN voltage corrector which calculates a ratio of the DC voltage detection value of the inverter obtained by the PN voltage detector to a predetermined DC voltage reference value of the inverter to thereby generate a PN voltage correction factor;

5 a first motor voltage command corrector which performs voltage correction of the motor voltage command value by multiplying the motor voltage command value obtained by the motor voltage command generator by a PN voltage correction factor which is an output value of the PN voltage corrector to thereby produce a motor voltage command correction value;

10 a motor current detector which detects a motor current of the motor;

a beat amount corrector which calculates a fluctuation amount of the motor current from the motor current detection value obtained by the motor current detector and generates a reverse phase component of the motor current fluctuation amount, and

15 a second motor voltage command corrector which performs voltage correction of the motor voltage command correction value by multiplying the motor voltage command correction value obtained by the first motor voltage command corrector, by an output value of the beat amount corrector, and generates a voltage command value to be applied to the motor.

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